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# Worldwide Report

ENVIRONMENTAL QUALITY

No. 315

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15 July 1981

# WORLDWIDE REPORT ENVIRONMENTAL QUALITY

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BALTIC SEA COUNTRIES AGREE ON PACT TO CONTROL HAZARDOUS CARGO

Helsinki HELSINGIN SANOMAT in Finnish 2 Jul 81 p 7

[Article: "Ships Carrying Hazardous Cargo in the Baltic Sea To Be More Closely Monitored"]

[Excerpt] The Baltic Sea governments have agreed to the establishment of a position reporting system to coordinate information on ships carrying chemicals, gas, etc. The purpose of the system is to improve the safety of navigation in the Baltic Sea, as well as to make possible timely and effective preventive measures in case of pollution in the sea area. The system was agreed upon as part of the Treaty on Protection of the Baltic. Its test period began on 1 July 1981.

Included in the position reporting agreement are all ships having a cargo tonnage capacity of over 20,000 grt, as well as those ships transporting over 1,600 grt of chemicals or gas. According to the agreement, the ships will report voluntarily their route and position to the reporting center of their respective country.

The Finnish reporting center was established at the headquarters of the Gulf of Finland Coast Guard. The center will be in service 24 hours a day around the year, and will be operated by an officer and radio operators.

The ship reports will be obtained by the center either from the maritime radio station or directly from the ship. The reporting language is English, and the operating time will be GMT.

The means of communication is by telex.

The center receives reports, monitors the ship's reported movement and transmits the reports to other centers.

Evaluations based on results during the test period will be used to examine the need for the system as well as to decide on any possible changes required.

CSO: 5000/2142



MEASURES TAKEN TO REDUCE POLLUTION, PROTECT ENVIRONMENT

Chromium Content in Water

Taiyuan SHANXI RIBAO in Chinese 10 May 81 p 2

[Article by Guo Yanling [6753 1693 0109]: "Taiyuan Machinery Plant Reduces Chromium Content in Water To Meet National Standard"]

[Text] A preliminary solution has been found for a major source of pollution in Taiyuan City, the waste water containing chromium discharged from the Taiyuan Machinery Plant. The chromium content of waste water discharged by this plant is now lower than the national emission standard.

In Shanxi Province, Taiyuan Machinery Plant has the highest capacity for electrical plating and is the largest electrical plating enterprise; it is also a major air and water pollution source in Taiyuan city. This plant electroplates a variety of metals including zinc, copper, nickel, tin, copper-tin alloy, hard chromium and decorative chromium, among which, pollution due to the highly toxic valence-6 chromium was most serious and hazardous. The volume of the chrome-plating tanks is 12,000 liters, each year the plating area reaches 3.2 million square meters and 174 tons of chromium-contaminated water are released every day. The waste water contains 150 milligrams of valence-6 chromium ion per liter, exceeding the national emission standard by 290 times.

In the past 2 years, Taiyuan Machinery Plant has greatly stepped up their environmental protection work during the period of national economic readjustment. With active support from provincial and municipal environmental protection bureaus, provincial light industry department No 2 and the second municipal bureau for light industry, the technical personnel have fully developed their key role. They investigated treatment plans for chromium-contaminated waste water for electroplating, carried out small scale experiments and obtained reliable parameters, determined the exchange volume of the facility, confirmed the oxidation resistance of resins, and used a combination of counter current washing, ion exchange, and thin film evaporation in treating the waste water and recovering the chromium. Construction work and equipment installation were conducted under a tight schedule and the entire project was completed at the end of 1980. After running for a few months, the recovery facility operated normally and the treatment effect was good. The facility is capable of processing 250 tons of chromium-contaminated water every day and the thin film evaporator is capable of

concentrating diluted chromic acid from 50 milligrams per liter to 300 milligrams per liter which can then be reused in the electroplating tank. The treated water is clear, transparent, odorless, contains almost no chromium and is far below the national standard of 0.5 milligram per liter. Moreover, each year 3 tons of chromium anhydride can be recovered, at a value of 17,000 yuan, and 45,000 tons of water can be conserved, at a value of 6,750 yuan. The combined saving of these two items is more than 23,000 yuan. Since the processed water has a higher purity, the quality of chrome plating is further improved.

Currently, administrative departments of Shanxi Province and Taiyuan City are planning on making Taiyuan Machinery Plant the electroplating center of Taiyuan and establishing an environmental protection testing station in this plant for the electroplating profession of the entire province. In the national economic readjustment, they are determined to put the spirit of relevant State Council documents on a solid basis, greatly step up the environmental protection work, work together to convert the electroplating plant which is a serious polluter into a clean, harmless and progressive production enterprise.

#### Emphasis on Vegetation's Function

Taiyuan SHANXI RIBAO in Chinese 10 May 81 p 2

[Article by Xiao Cao [1420 2580]: "Vegetations Are Important for Environment Protection"]

[Text] Green plants are nature's factory for absorbing poisonous gas and producing oxygen. Measurements show that one hectare of forest can absorb approximately 1 ton of carbon dioxide and produce 0.73 tons of oxygen per day. If a person has 10 square meters of forest or 50 square meters of grassland, that would be enough to absorb the carbon dioxide breathed out and to provide the oxygen needed by one person in one day.

Some plants can also absorb poisonous and hazardous gases in the atmosphere. One hectare of cryptomeria can absorb about 700 kgs of sulphur dioxide. Musa coccinea, perpetual, lilac, chrysanthemum, ginkgo and myall can also absorb large quantities of sulphur dioxide.

Green plants are nature's huge vacuum cleaner. Green plants, especially forests, are very effective in blocking and filtering dust. They generally reduce dust by 21 to 39 percent. The ability to absorb dust of a grassland is 70 greater than that of bare ground. A forest's ability to absorb dust is 75 times that of bare ground. Measurements show that the amount of dust absorbed by 1 hectare of beech trees is as much as 68 tons.

Plants can also kill bacteria. Many plants have bactericide secretion. One mu of pine trees can produce 2 kgs of bactericide secretion in 24 hours. Such bactericides can exterminate the bacteria of diphtheria, tuberculosis and dysentery. Plane trees are capable of killing bacteria in 3 minutes.

Moreover, green plants are also a huge muffler, reducing noise pollution. Green plants are environmental monitors as well.

## Method for Reducing Air Pollution

Taiyuan SHANXI RIBAO in Chinese 10 May 81 p 2

[Article by Quan Shuzhen [2938 2885 2823]: "A Practical Means for Eliminating Air Pollution"]

[Text] One of the major concerns of the people of Taiyuan City is how to eliminate air pollution. As is well known, the sky above Taiyuan often has billowing dark smoke and floating clouds of dust. The discharge of poisonous and hazardous matters increases greatly in winter when the 900 industrial furnaces and kilns, 1,700 tea furnaces, 2,100 boilers, and more than 300,000 home furnaces are all fired up. Statistics show that every year the city discharges 1.59 million tons of sulphur dioxide, hydrocarbons, dust and other hazardous material into the air and the public health is seriously jeopardized.

Although the major sources of air pollution are the industrial furnaces and kilns, heater boilers and business furnaces, the thousands upon thousands of small household furnaces for heating and cooking also contribute greatly to the pollution of air. The small household furnaces have low thermal efficiency and incomplete combustion, releasing great amounts of dust and smoke at a low altitude and directly jeopardize the environment and people's health. The surest method for eliminating this kind of pollution is naturally using coal gas in the city. However, since the use of coal gas is not yet feasible, a simple and practical solution for conserving coal, reducing pollution and protecting the environment is to convert the thousands of home furnaces that burn loose coal to the use of honeycomb coal. Commercial honeycomb coal is made of low-sulphur coal. It has a low soil content and the uniform air holes supply sufficient oxygen so that the volatile hazardous gases can be burned completely. It can therefore reduce the pollution from smoke and dust. Residents in Zhengzhou municipality of Henan Province switched to burning honeycomb coal in 1965 in all their heating and cooking; this has not only saved coal and reduced pollution but also greatly reduced the hauling of ash and char.

It is estimated that, if all the Taiyuan residents were to switch to honeycomb coal, each year 308,000 tons of coal could be saved, hazardous pollutant emission could be reduced by 72,700 tons, ash and char could be reduced by 260,000 tons and hauling would be reduced by 70,000 trips. We therefore suggest that the various levels of people's government promote civilian use of honeycomb coal in order to create favorable conditions for eliminating the air pollution in Taiyuan City.

9698

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PEOPLE'S REPUBLIC OF CHINA

SHAANXI PROVINCE URGED TO PUBLICIZE ENVIRONMENTAL PROTECTION

Sian SHAANXI RIBAO in Chinese 21 Mar 81 p 1

[Article by Zhang De [1728 1795] and Huang Weijun [7806 4850 6874]: "Widely and Actively Publicize Environmental Protection"]

[Text] On 20 March 1981, the people's governments of Shaanxi Province and Xi'an Municipality jointly convened an environmental protection publicity mobilization rally. The rally was attended by Sun Zuobin [1327 0155 6333] vice chairman of the Standing Committee of Shaanxi People's Congress, and leaders of the Shaanxi and Xi'an People's Congresses, the Shaanxi and Xi'an People's Governments, and the various commissions and bureaus concerned, as well as delegates from many industrial and mining enterprises, totaling more than 1,600 people. The rally was addressed by Liu Geng [0491 1649], deputy governor of Shaanxi Province, and Li Tingbi [2621 1694 1732] vice mayor of Xi'an Municipality.

Comrade Liu Geng said that at present Shaanxi should actively carry out the important central policy of further readjusting the economy and stabilizing the government, and also improve environmental protection. He emphatically pointed out the importance of the following:

(1) Seriously study and widely publicize the State Council "Decision on Strengthening Environmental Protection During the Period of National Economic Readjustment" and impress on the people the important significance of environmental protection. During this period, efforts should be made to prevent the occurrence of new pollution from the construction, reconstruction and expansion of projects. This can be achieved by strictly carrying out the "three-simultaneous" arrangements. All projects which are unsound in their layout, wasteful in their consumption of material and energy, and liable to cause heavy pollution resolutely should be suspended.

(2) Continue to publicize environmental protection rules and regulations. Efforts should be made to promote the formulation and promulgation of local environmental protection rules and regulations to raise the environmental protection consciousness of the leadership at the various levels as well as the masses of the people, so that all will take the initiative to improve their environments. It is also necessary to publicize the "Shaanxi Provisional Regulations Governing Levying Monetary Charges for Pollution."

(3) Carry out a mannerly campaign centering on the "five gracious" and "four beautiful" standards and promote the new social mores of glorifying environmental protection.

(4) Publicize typical cases of the successful control of pollution. In Shaanxi, 39 units including the Shaanxi Heavy Machine Plant are noted for their outstanding success in controlling pollution, and 3 cities, including Xi'an, Tongchuan and Yanan, have achieved good successes in controlling air pollution. It is necessary to sum up and popularize their experiences to promote pollution control. In the meantime, efforts should be made to publicize the seriousness and harm of environmental pollution. In Shaanxi, there are still a considerable number of enterprises which are indifferent to environmental protection, resulting in serious pollution to natural resources and serious damage to the ecological conditions. This situation has aroused strong reaction among the masses of the people. Ample attention and effective measures should be taken to solve this problem.

(5) Intensify propaganda for the protection of natural resources and do a good job in this work. At present, it is necessary to publicize emphatically the forest protection law, and do a good job in agricultural zoning and in the protection of water and natural resources.

Comrade Li Tingbi in his speech emphatically pointed out that in this environmental protection publicity campaign, members of the leadership should personally take part in giving lectures, organizing the workers, the youth and the women, and directing the public health and other organizations to supervise and carry out environmental protection tasks. In the course of carrying out the readjustment of the economy, it is necessary to shut down, suspend, amalgamate or convert the plants and enterprises which cause heavy pollution and which are not able to control such pollution, even though they are not scheduled in the economic plan to be shut down, suspended, amalgamated or converted. Environmental protection authorities should quickly formulate environmental protection plans for Xi'an Municipality in conjunction with city planning and civic construction projects. At present, special attention should be paid to stopping the destruction of water, soil and forest resources resulting from irrationally filling up lakes and rivers or over-tapping underground water resources. Studies should be made to establish natural preservation areas in the Xi'an Municipality to protect the natural environments of historical and scenic areas. It is necessary to place environmental protection work on the agenda of the leadership, so that it will be reviewed several times a year as a part of economic planning, so that the arrangements for production will include measures for environmental protection, and so that the periodical review of the economic work will include environmental protection work.

Both Liu Geng and Li Tingbi pointed out the important significance of the current environmental protection publicity campaign toward the promotion of the development of a stable and united political situation and the fulfillment of the economic readjustment task. The people's governments at all levels and the other authorities concerned should do a good job under the leadership of their party committees in this campaign, strengthening their leadership, coordinating with one another, relying on the masses, and promoting a common feeling toward environmental protection among all quarters in Shaanxi Province.

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PEOPLE'S REPUBLIC OF CHINA

SHENYANG ENVIRONMENTAL RESEARCH STUDY APPRAISED

Shenyang LIAONING RIBAO in Chinese 27 Mar 81 p 1

[Article by reporter Gang Shuchang (0073 2885 1603): "Liaoning Environmental Research Achieves Great Successes"]

[Text] The Shenyang Area Environment Quality Appraisal and Pollution Control Study is a key research project of the state. In the opinion of the participating experts, professors and engineers from many areas of China, the environmental quality and pollution control in Shenyang is maintained at one of the most advanced levels in China. This marks a great success in environment research in Liaoning. It is also a relatively good appraisal of the environmental quality of a major industrial municipality in China.

Shenyang is a major heavy industrial municipality in China. Its industrial units release substantial quantities of pollutants of many categories. To study the main sources of pollution, the flow and transformation of the main pollutants, the effects of the main pollutants on ecology and human society, and environmental quality of Shenyang as a heavy industrial municipality, beginning in 1977 a contingent of 450 scientists and technicians from more than 30 research institutes including the Shenyang Environmental Protection Research Institute, and a number of educational institutions, and industrial and mining enterprises have carried out the aforementioned project under the joint sponsorship of the authorities concerned of Liaoning and Shenyang. These scientists and technicians have conducted an overall comprehensive study of the environmental problem from six angles: the sources of pollution, the atmosphere, the water bodies, the polluting irrigation, the ecology and the human society. In the past 3 years, the participants in this research project have covered almost 600 square kilometers centering around Shenyang Municipality in carrying out surveys, inspections, field studies, analyses, and tests. They collected about 700,000 data, and came forward with more than 170 reports, research papers and summarizations of their progress. They have relatively, successfully fulfilled this research project, and offered scientific ways and means to achieve overall environmental control and transformation in the Shenyang area.

It is held that this project is quite advanced in its systematic study of the emission and spread of sulphur dioxide, a main pollutant, and the movement and distribution of cadmium, lead, benzene, etc. In the project, an initial study was made on the control of the total emission of sulphur dioxide as the main pollutant. This study offers a useful method to control the total emission of pollutants, a method of some practical value.

EMPHASIS ON ENVIRONMENTAL PROTECTION SAID TO INCREASE PRODUCTION

Beijing RENMIN RIBAO in Chinese 4 May 81 p 2

[Article by Wang Ziqiang (3769 1311 1730)]

[Text] In the year 1979, the great "poisonous dragon" which had ravaged Shenyang for more than 40 years was subdued. The great polluter of Shenyang City, Liaoning Province, the Shenyang Metallurgical Plant now discharges 10,000 tons of wastewater every day, but in all of 1980, the water has met the regulation standard of the state, and the plant has not paid a single penny of discharge fee. These events have been the talk of the town. Meanwhile, the value of products and the profit from that plant in the last 3 years have grown from an average increase of 7.7 percent a year to 33 percent.

Shenyang Metallurgical Plant is a comprehensive color metal refining enterprise of China. It is located in the center of the Tiexi Industrial District of the city. It was constructed in the thirties. Its equipment was old and its production process backward and the pollution problem serious. The amount of sulfur dioxide ejected from its 37 chimneys amounted to 40 percent of the total sulfur discharge in Shenyang City. Moreover, its wastewater contained such heavy metals as copper, lead, zinc, cadmium, and arsenic in relatively high quantities. The environmental pollution was destructive to the areas of Zhangshi Irrigation District, Beiling Park, and the residents of nearby areas.

Since 1977, Shenyang Metallurgical Plant has emphasized environmental protection and proceeded to reconstruct the old plant. Very obvious results have been obtained. The major measures are as follows:

(1) Environmental protection is given attention in conjunction with production management to institute environmental protection measures in every step of the production process of the plant. From the director to every worker, each person has his own responsibility to perform in this matter. There are also plant regulations, work standards, and administrative and economic means of guaranteeing the implementation of these measures. Competitions are organized among the major machine shops, with 40 points assigned to environmental protection. Prizes are awarded for completion of protection measures; withheld for failure to complete them. If they are completed very well, additional prizes are awarded. In this manner, a mere 200,000 yuan was spent to treat 28 items of heavy-metal-containing wastewater in the first half of 1980, while the benefits in that year amounted to 350,000 yuan. All the wastewater discharged by all the shops of the plant meet the discharge standard of the state.



(2) Environmental protection is pursued along with equipment renewal. The plant is determined to make large changes during major repairs, small changes during minor repairs. Changes are made during every repair and there would be no need to repair if there were no changes. Since 1978, the resolution of simultaneously designing, constructing, and operating major engineering projects with environmental pollution measures has been consistently and unfailingly carried out and no new source of pollution has been added. The pollution producing equipment previously in existence has also been reconstructed to achieve the desired effect in pollution treatment.

(3) Environmental protection is carried out in the process of improving work procedures to bring about continuously the most economical design for production and environmental protection. To use a minimum amount of capital investment to obtain the greatest possible economic and environmental benefit has been the objective. According to the suggestion of foreign specialists, the technical reform of the copper refining system would require an investment of 10,000,000 yuan. After repeated discussion and comparison, it was finally decided to adopt the air furnace technique so that the existing equipment could be fully utilized while improving the work procedure. As a result, 1,000,000 yuan was all that was needed to resolve the problem [of pollution].

(4) Environmental protection is carried out with comprehensive utilization. Waste is turned into treasure; the harmful is changed into the beneficial. The plant adopted measures for cyclic and repeated use of water, so that as pollution is reduced, more than 15,000 m<sup>3</sup> of water is saved every day, at a savings of 960,000 yuan a year. In 1980, the technique of using waste gas to produce acid was adopted. The production reached 113,000 tons, valued at 10,000,000 yuan. This project brought in a profit of 2,000,000 yuan. In the past 3 years, the Shenyang Metallurgical Plant invested a total of 18,550,000 yuan for environmental protection, but from the 3 wastes, the reclaimed sulfuric acid, valuable metals, and clean water amounted to a return of 17,290,000 yuan from the investment. The reduction in pollution, a social benefit to industrial and agricultural production and human health, amounts to an additional benefit from the investment. At the same time, the production of more than 120 units, engaging in farming, forestry, light industry, and textiles has received aid and support.

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6501 5880/4048



### THREE POLLUTANTS SEEN UNDER CONTROL

Wuhan CHANGJIANG RIBAO in Chinese 23 Apr 81 p 1

[Article by Tang Jiming (0781 4764 2494): "Wuhan Metallurgical Bureau Stresses Control of Waste Gas, Waste Water and Waste Residue"]

[Text] The Wuhan Municipal Metallurgical Industry Bureau made environmental protection one of the items for enterprise consolidation, incorporated the development of potential, improvement and modification of the old enterprises, and systematically carried out the "three pollutants" management step by step. In the past year or so, they have completed 10 antipollution projects and the waste gas and waste water have both reached or surpassed the national standard after general treatment.

In the past, due to backward industrial equipment, the 21 plants, mines and stations of the city's metallurgical industry produced great amounts of waste gas, waste water and waste residue in their production process and caused various degrees of pollution and damage to the city. Since last year, this bureau has put great efforts into environmental protection as a vital part of the enterprise consolidation and economic readjustment, established environmental protection monitoring stations and opened up routine investigation and monitoring of the environment and research on prevention technology.

In their effort toward environmental protection, the bureau incorporated the development of potential, improvement and modification of old enterprises and opened up general treatment according to the urgency of the cases. The smoke and dust emission from the steel-rolling heating furnace at the Hanyang Iron and Steel Mill was below standard. In 1980, they made technical improvements on the furnace, rebuilt the furnace body, adjusted the coal dust burner and finally controlled the "black dragon." Since the improvement, the dust content of the atmosphere around the furnace is 30 percent lower than that specified by the national standard and the coal consumption has decreased by 22 percent. In mid-March of 1981, the Provincial Economic Commission consolidated and exchanged experience with them. At Wuhan Copper Materials Plant, they designed a simple and practical pulling-tube type dust collector specifically for the pollution caused by the induction furnace for melting copper. By doing so, they solved a 10-year-old tough problem. This has not only resolved the environmental problem but also recovered 3 tons of zinc oxide powder per month at a value of more than 2000 yuan. The Wuhan bureau has also rigorously carried out the "three simultaneous"

policies to prevent new pollution. In 1980, when the main body engineering of the steel-tubing galvanization shop at Wuhan Steel Tubing Plant was close to completion, three requests were made for test run production. Bureau officials and associated personnel made three inspection visits to the construction site and found that the "three pollutants" treatment facilities were not yet completed and changed the test run production plan on all three occasions. When the environmental protection facilities were completed and inspected and certified by the environmental protection agencies of the city and the ward, then production began. Recently, in inspections and evaluations, Hanyang Iron and Steel Mill, Wuchang Coking Plant, Wuhan Copper Materials Plant and Wuhan Band Steel Plant of this system were elected progressive enterprises in environmental protection and eight cadres were also elected as progressive individuals in environmental protection in Wuhan Municipality.

9698

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OZONE USED TO DISINFECT HOSPITAL SEWAGE

Wuchan CHANGJIANG RIBAO in Chinese 23 May 81 p 1

[Article by Li Zhengyan (2621 2973 3508) and Wang Keqiang (3769 0344 1730):  
"Disinfecting Hospital Sewage With Ozone Succeeded"]

[Text] Supported by the Municipal Environmental Protection Bureau, a scientific research group, consisting of workers from the Hubei Institute of Industrial Construction, the Municipal Antiepidemic Station and the Municipal Tuberculosis Hospital, succeeded in disinfecting hospital sewage with ozone after 2 years of experimentation and research.

In the past, several hospitals along the shore of East Lake discharged their bacteria-contaminated sewage directly into the lake, therefore the water quality of East Lake is badly polluted and threatens the health of the population. Traditionally, chlorine disinfection is often used in treating hospital sewage. Although the chlorine method has the advantages of being effective and low cost, when the disinfected hospital sewage is discharged directly into more crucial bodies of water such as reservoir, scenic lake, swimming pool and fish hatchery, it often causes "secondary pollution." In order to find new disinfection methods, the research group has repeatedly carried out static and dynamic tests since 1978 without the benefit of precedents here or abroad, and has continuously consolidated and improved the new technology of disinfecting hospital sewage with ozone and has finally succeeded.

Experimental tests show that this new technique of disinfecting hospital sewage exterminates bacteria quickly and its efficiency for killing pathogenic bacteria, such as staphylococcus aureus, shertella typhosa, escherichia coli, bacillus tuberculosis, and bacillus subtilis, is as high as 99.99 percent. Moreover, upon contact with sewage, the ozone also discolors and deodorizes the sewage, increases the amount of dissolved oxygen, oxidizes and decomposes organic matters and makes the water quality better than that specified in the national emission standard.

This new technology is also being used in Suzhou, Xuzhou, Nanchang, and Shenyang.

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CSO: 9000/4076

PEOPLE'S REPUBLIC OF CHINA

REMODELED PLANT SAID TO CONSERVE ENERGY, IMPROVE ENVIRONMENT

Wuhan CHANGJIANG RIBAO in Chinese 20 Mar 81 p 1

[Article by Lu Baokang (0712 1405 1660): "Hanyang Steel Plant Succeeds in Remodeling the Heating Furnace of Its Steel Wire Workshop To Conserve Energy and Improve Environmental Protection"]

[Text] The Hanyang Steel Plant has succeeded in remodeling a coal dust-burning rolling-steel heating furnace of its steel wire workshop. In the 3 months since this remodeled furnace was put into productive operation, its coal consumption has decreased by 22 percent and its air pollution has markedly diminished. On 3 March 1981, competent authorities examined the dust content in the atmosphere surrounding that furnace and found it was 30 percent below the allowable amount set by the state. During the period 17 to 19 March, the Hubei Provincial Economic Commission convened at the Hanyang Steel Plant a provincial conference to exchange experiences on energy conservation by rolling mill heating furnaces.

The Hanyang Steel Plant is one of the most serious air pollution sources in Wuhan Municipality. In the past, due to negligence in environmental protection and lack of action in adopting advanced technology, the blast furnaces and the rolling steel heating furnace of the plant used to release large quantities of smoke, dust and harmful gases, thereby heavily polluting the environments of factories, schools and residential areas nearby, arousing great anger among the masses of the people.

The higher authorities often carried out inspections of this situation. They instructed the steel plant to improve the pollution conditions within a time limit. The leadership of the steel plant who studied the environmental protection law realized that the plant was obligated to remedy its air pollution to protect the environment. Efforts were made to carry out a technical innovation campaign for both energy conservation and environmental protection, killing two birds with one stone.

In September 1980, the plant succeeded in remodeling its blast furnaces, enabling them to recapture coal gas. After that, it embarked on the remodeling of the coal dust-burning rolling-steel heating furnace of its steel wire workshop, although it was necessary to suspend the operations of the furnace in the meantime. With the support and cooperation of related authorities, and drawing from the experience of more advanced coal-burning heating furnaces in China, the plant earnestly carried out the remodeling of that furnace, readjusting the

position of its coal dust nozzle to enable the coal dust to burn more completely, moving the exhaustion pipeline from a lower position to a higher position, improving the functions of its dust control sprinklers, and increasing the air tightness of the furnace to reduce the loss of heat. In the 3 months after remodeling, the heating furnace has brought about very delightful economic results: The production of steel wires has increased by 6 percent, amounting to more than 7,000 tons; the profit has increased by about 80,000 yuan; coal consumption has been cut down by more than 6,400 tons, valued at more than 20,000 yuan; and the pollution penalty has been reduced by more than 10,000 yuan. Thanks to the control of pollution, the workers of the steel wire workshop have enjoyed better working conditions, and the masses of workers and people of nearby factories and residential areas are delighted.

From the success in remodeling the heating furnace of its steel wire shop, the Hanyang Steel Plant has gained much confidence in pollution control. At present, the plant has suspended the operations of a medium-sized open-mold heating furnace for remodeling, and is planning to remodel a number of other heating furnaces as soon as possible.

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CSO: 5000/4061



PEOPLE'S REPUBLIC OF CHINA

BRIEFS

ORGANIC CHLORINE POLLUTION--Under the close co-ordination of related departments of the city and the communes and brigades of the suburbs, some obvious achievements in the work of preventing pollution from organic chlorine, chiefly 666 and DDT, used in agricultural production, have been obtained. To date, the amount of organic chlorine insecticides used in the city has been reduced from the 70-80 percent of total insecticides used to 11 percent. The vegetables, fruits, rice, and corn produced in the city have now reached the level of 666 and DDT residues permissible by the state. Contents of most wheat samples do not exceed the limits either, while the rate of excessive residue content of other farm and animal products is also obviously dropping, however gradually. Related industrial and commercial departments and communes and brigades are also taking further steps in using substitutes and ultra-low level mixing measures to continue reducing organic chlorine insecticide residues for the protection of people's health. [By Zhang Yanli [1728 3601 0500]] [Text] [Beijing BEIJING RIBAO in Chinese 8 Jun 81 p 1] 6248

CNO: 5000/4048

## ANTI-POLLUTION MEASURES PAY BY RECYCLING WATER SYSTEM

Manila PHILIPPINES DAILY EXPRESS in English 20 Jun 81 p 12

[Article by Paul Icamina]

[Text]

**ANLONO**, Rural  
Nothing unusual about this animal farm except that it hardly smells. Which says a lot about 22,000 pigs, 6,000 ducks and some cattle.

All the manure the animals produce are channeled into a huge biogas and energy conservation system where even the heat from exhaust pipes is used.

We are at the Maya Farms which can process 38 tons of manure into biogas from 25,000 pigs every day. Some 35 kilometers east just outside Metro Manila, the farm spread in the rolling Antipolo Hills is probably one of the first in the world to use biogas in an industrial scale. And claiming that it pays.

Maya Farms currently produces 66,000 cubic feet of biogas a day, supplying 60 percent of its energy needs. All to power a meat processing plant

making ham, bacon, hotdogs and other specialty products, and a canning plant that produces a line of canned meat products and a line of canned soup.

Part of the biogas is used as fuel to fire the retorts in the rendering plant, the mauling tank in the slaughterhouse and the cooking vats in the processing plants. The rest serves as fuel for converted gasoline engines which drive all kinds of equipment and machinery.

Two biogas-powered water pumps deliver 405 gallons per minute from 400-foot deep wells for 15 hours a day. Slurry pumps simplify manure and sludge handling. In the feed mill, one biogas engine runs two feed mixers and one corn grinder. The refrigeration systems cooling 11 walk-in freezers in the meat processing plant are powered by Toyota car

engines running on biogas.

Biogas also drives electric generators for the administration building, canteen and dormitory; it also lights the compound at night. Another biogas-powered generator provides electricity for the drying rooms in meat processing. And Maya Farms has already ordered a generator which will provide all the power needs of the farm.

"In fact," says gentleman-farmer Felia D. Maramba Sr., "after 1983, we expect enough excess biogas electricity to sell to the National Power Corporation which can distribute it nearby. Then we get credit for an equivalent amount of electricity to power, say, our flour mill in Manila." By then, Maya Farms will have 40,000 pigs to run the whole farm on 120,000 cubic feet of biogas each day, or an increase of 82

percent from present levels.

Dr. Maramba, 83, is a registered mechanical and agricultural engineer and has served as chief of the industrial engineering division of the then Bureau of Science (now National Institute of Science and Technology) and dean of engineering and graduate studies of Ateneo University, a respected agricultural school.

At present, he is consultant to the Ministry of Energy on nonconventional energy sources. He also heads the 24-hectare Maya Farms, the agro-industrial division of Liberty Flour Mills of which he is president and director.

Liberty Flour Mills is one of the top 100 corporations, in sales and tax, of the Philippines, earning some 15 million pesos (US\$2 million) in 1980. And its faith in biogas and energy conserva-

toon is immense, if not total. This is, in fact, Dr. Maramba's baby.

Maya Farm has developed a total waste recycling system which controls pollution and generates fuel gas. The bones, blood and meat, for instance, are mixed together with other feed materials in the feed mill and fed back to the animals.

Biogas is the scentless, smokeless and odorless blue gas when organic wastes, like manure, ferment in the absence of air in a biogas digester. It is composed of methane (65 percent), carbon dioxide, some hydrogen and traces of carbon monoxide, nitrogen, hydrogen sulfide and water vapor. It is harmless and has been used on a wide scale in millions of houses in China, India and Taiwan and other parts of the world.

At Maya Farms, it started simply enough in 1972 when oil and electricity were cheap "just to control the potential air pollution from 3,000 pigs," recalls Dr. Maramba. A \$ 0 0 . 0 0 0 . p e s o (US\$67,000) biogas plant then turned out 15,000 cubic feet of gas each day. Indian, Taiwanese, Chinese, African and European models were tried until local designs, made from local materials, were fabricated.

The first industrial size biogas unit was

built above ground, with a cluster of 24 individual batch-fed digesters (where wastes ferment) with a total volume of 19,200 cubic feet. The next 24 digesters were built underground. The latest, finished six months ago, has six rows of continuous-fed digesters.

The fermented sludge from the digesters are pumped into settling basins. Grass cuttings at one end of the basins serve as filters retaining the solids while the liquid flows out to conditioning lagoons. These are shallow lagoons used to remove toxic substances like hydrogen sulfide from the liquid sludge, exposing it to oxidation and enhancing its fertilizer value. The grass cuttings are regularly changed and fed to the cattle.

The entrained solids form into scum on the lagoon surface and, from time to time, laborers had to clean them. Then somebody had the bright idea that ducks can be trained to feed on the scum. "We've started duck raising since then," says Dr. Maramba. "The ducks now feed entirely

on the scum."

In one batch of lagoons, a windmill helps the aeration. Aerated liquid fertilizes a crop field and fishponds. The field grows one crop of rice during the rainy season and two crops of corn during the dry season. The corn goes to the canning plant, the rice bran to the feedmill.

The farm used to dry rice straws and corn stalks, chop them up and mixed with manure slurry into the biogas digesters. Biogas production increased but batch-fed digesters — more expensive to build than continuous-fed digesters of the same capacity — had to be used to avoid clogging. It also used more energy to produce. Someone thought of feeding the wastes instead to cattle, producing beef and milk while the cattle dung gives more biogas than the crop residues.

"Ever since, we were raising cattle," says Dr. Maramba.

Biogas is not the only source of energy at Maya Farms. Even the engine and exhaust gas is used to preheat the feed water to the steam boiler. One exhaust gas from one engine is used to cook

and distill cassava mash into alcohol. Three farm trucks have been converted to run on both gasoline and completely on straight hydrous alcohol. The entire farm truck fleet is planned to be able to use both types of fuel.

"With the use of biogas, we save anywhere from a low of 726,278 pesos (US\$96,840) to a possible peak of 1.7 million pesos (US\$220,000) per year, or from 60,000 pesos (US\$8,000) to 143,742 pesos (US\$19,000) each month," says Alejandro Judan, operations vice president for finance.

The feed materials from sludge supply around 10-15 percent of total feed requirements of the hogs and cattle and about 50 percent of the feed for the ducks. If computed at a conservative 1.20 pesos (US\$0.16) per kilo (commercial feed now costs about 2 pesos or US\$0.27 per kilo), the 3.5 tons of sludge feed produced each day can easily be worth 4,500 pesos (US\$600) a day or 1.5 million pesos (US\$200,000) per year.

*Depthnews Asia*

## TRINIDAD AND TOBAGO

### BRIEFS

ANTI-EROSION WORK--San Fernando--Point Fortin Borough Council is "very concerned" with the "dangerous situation of the soil erosion" at the seaside in Cap-de-Ville, Point Fortin. Stating that yesterday, Mr Merle Baird, Town Clerk, said after a meeting last week, involving the entire council, the Ombudsman, Mr Evan Rees, two of the affected residents and senior representatives from the Government Drainage Division and Rep. Cyril Rogers, it was agreed that work should start immediately to stop the erosion. Mayor, Lionel Blake headed the Council's team at the meeting which was held at the Drainage Division office in San Fernando. Because of the urgency of the situation, short term work is expected to start this week to save at least three buildings which could collapse at anytime. The council has requested the affected residents to report to the Council on the progress of work. However, it was pointed out that the Drainage Division was responsible for the job. It was pointed out that the problem of sea erosion in the particular area was about 15 years old, but the situation was getting worse. After an on-the-spot inspection, the council was satisfied that at least four houses were in immediate danger. [Text] [Port-of-Spain TRINIDAD GUARDIAN in English 16 Jun 81 p 1]

CSO: 5000

STIFF ENVIRONMENTAL PROTECTION LEGISLATION PROPOSED

Caracas EL UNIVERSAL in Spanish 5 Jun 81 p 1-27

[Text] Caracas, 4 June--The president of the Congress of the Republic, Dr Godofredo Gonzalez, has received a Bill for Mandatory Protection of the Environment from the hands of the minister of the environment and renewable natural resources, Dr Carlos Febres Pobeda. It establishes new severe penalties for those who commit crimes against the ecology. The bill was drawn up by the legal advisor's office of the Ministry of the Environment, in coordination with other organizations, in view of the need for a legal instrument of a mandatory nature to punish actions harmful to the environment and renewable natural resources. According to the statement, a Bill for Mandatory Protection of the Environment was needed because present laws regarding this subject do not really motivate people to comply with its purposes of defending, conserving and improving the environment; since the traditional administrative punishments--fines--are not sufficient, criminal penalties must be established.

The bill specifies a series of actions as criminal offenses against the environment, and provides for fines of up to 1 million bolivars or prison terms of up to 10 years, penalties which do not appear in present legislation on the subject.

Its main impact is the imposition of penalties on natural or juridical persons who are responsible for actions or omissions which are infractions or crimes which damage the environment and renewable natural resources.

Besides the main penalties, prison terms of up to 10 years and fines of up to 1 million bolivars, the new law provides for additional penalties such as temporary or definitive disqualification from the exercise of public functions or of a profession for those who commit ecological crimes.

The bill also provides for the creation of a Conservationist Investment Fund, assigned to the Ministry of the Environment, whose assets will come from fines imposed on offenders who break this law. The crimes to be included in the Law for Mandatory Protection of the Environment cover degradation, poisoning, pollution, and other actions or activities capable of causing damage to the water, soil, air, flora or fauna. Actions which destroy and cause damage to the natural landscape and to the urban environment are also considered crimes.



This bill, which yesterday was presented to the National Congress for further debate, will strengthen our environmental legislation considerably, and will be a point of departure for substantial improvement of the punitive system relating to deeds and actions harmful to conservation, defense and improvement of the environment.

The president of the Congress of the Republic, Dr Godofredo Gonzalez, announced the Minister Febres Poveda the appointment of a special commission to immediately proceed to analyze the Bill for the Mandatory Protection of the Environment, in which new and severe penalties will be established against those who commit ecological crimes. Because of the regulations now in effect in Congress, we do not have an Environment and Renewable Natural Resources Commission, but I maintain that in the reform of those regulations which is now going on the creation of that commission ought to be included, and that the different political factions should be in agreement on it.

8131

CSO: 5000/2133

## BRIEF

CROSS RIVER EROSION CONTROL--Four hundred and sixty thousand naira (N460,000) has been set aside by the Cross River State Government for land reclamation and soil erosion control within this financial year. In addition, N360,000 has been provided for pollution control and waste disposal in major urban towns in the state. The State Governor, Dr Clement Isong made this known in an address read on his behalf by his deputy, Dr Mathias Offoboche, while launching the "World Environment Day Celebration" in Calabar. Reiterating his government's promise to provide the state with good housing within a clean and liveable environment, the Governor said a legislation was underway to meet realities. At the moment, he said, the Federal Government had awarded a contract for the control of marine erosion at Ibene in Eket Local Government area of the state. Another contract had been awarded by the Federal Government for the stabilization of erosion gullies at Uyo, he said. Governor Isong announced that his government would soon award contracts for control of erosion menace in Calabar municipality, Ikono and Oron Local Government areas of the state. (Text) [Lagos DAILY TIMES in English 16 Jun 81 p 31]

CSO: 5000/5030

## DDT USAGE 'NEARING CRISIS LEVEL'

Salisbury THE HERALD in English 30 Jun 81 p 9

[Text]

**THIS** year's reported import quotas for DDT indicate that Government agencies and farmers in Zimbabwe plan to use almost as much DDT this season as was used at the height of the controversial pesticide's application in the United States between 1956 and 1970.

The Provincial Warden for Mashonaland South in the Department of National Parks and Wild Life Management, Mr Ron Thomson, yesterday outlined the planned use of DDT in Zimbabwe for this coming year.

**COMMENT**

He was commenting on a claim by the chairman of the Natural Resources Board, Mr Lance Smith, that the use of DDT in Zimbabwe was diminishing.

As a conservationist, Mr Thomson has been campaigning for several years to curtail the widespread use of the pesticide in Zimbabwe because of the damage it causes to the environment.

In a recent Press article Mr Smith said it should be reluctantly accepted that DDT should continue to be used in Zimbabwe to combat malaria, tsetse fly and certain crop pests "at this point in time".

He claimed that the quantity of DDT used annually in agriculture had dropped by about two-thirds over the past seven years.

Mr Thomson said that about 1 000 tonnes of DDT would be used in Zimbabwe this coming season.

"The tsetse department quota is 400 tonnes — a substantial increase over recent years.

"Agriculture intends using 300 tonnes and the Ministry of Health a further 300 tonnes. Altogether we will be applying DDT in Zimbabwe during 1981/82 at a rate of one metric tonne per 150 square miles.

"The United States, which probably suffered the most traumatic experiences of any country in the world from DDT pollution, applied the chemical at a rate of one metric tonne per 144 square miles during the heyday of its use between 1956 and 1970 — only 4 percent more than we are applying it here this season.

"Our application rate will be 75 percent of the highest single annual application in the United States (1968)," Mr Thomson said.

"The DDT pollution problem is the most important conservation challenge this country has ever had to face after soil erosion. Unless we resolve it without permanent degradation to our environment, Zimbabwe will never lead the conservation field in Africa or be able to hold its head high at international conservation forums," he said.

Mr Thomson said DDT could be banned immediately in agriculture as the two crops for which it is registered, maize and cotton, are successfully grown in South Africa and the United States without the use of the chemical.

**MALARIA**

"Even in malaria control a switch can be made to alternatives, but this will take time since the infrastructure to apply alternatives is not yet established."

Mr Thomson said the only people in Zimbabwe who had had a say in the control of DDT were those who used it or who were responsible for recommending its use.

"The suggestion that DDT should be elevated to the 'Purple Triangle' category of pesticides is a red herring because this step would concern only the general public who should not be allowed to buy DDT under any circumstances. It is the Government that uses most DDT and recommends its use in agriculture, so what purpose would a purple triangle serve?"

Mr Thomson said there was no reason why DDT should not be kept in reserve for very special purposes.

"But as a special chemical in our arsenal of pesticides it should not be used as a general pesticide for agricultural crops, tsetse control or malaria control.

"It should be brought out to combat problems in all these fields only when and if there is a critical problem of national importance which simply cannot be combated by using any other means," he said.

Mr Thomson warned that if DDT continued to be used at the present rate in Zimbabwe, Kariba would shortly become the "dead lake of Africa".

"Come will be the fish eagle, the tiger fish and a whole host of other commercially important lake fishes," he said.

PROSPECTS OF CHIMUMBANJE IRRIGATION SCHEME DISCUSSED

Salisbury THE HERALD in English 3 Jul 61 p 3

(Text)

Salisbury has been harvested. Chimumbanje would develop into a great growth point in the future.

"Industry will flourish at Chimumbanje and so will secondary industry. Government is examining a project based on sugar and using existing water as the first step in this mammoth task."

Zimbabwean industrialists came under fire for not changing the THE Chimumbanje irrigation scheme, with a potential of irrigating 40 000 ha of 1 000 acres, will create settlement and job opportunities for over 150 000 people once it is fully developed.

The Minister of Lands, Resettlement and Rural Development, Dr Sydney Sekeramayi, said once the colonial legacy of training more whites than blacks in highly skilled jobs.

The Deputy Minister of Manpower Planning and

Development, Mr Cephas Mupfema, noted that apprenticeship intake figures for 1960 resembled the colonial pattern.

Eighty-nine percent of the apprentices in the aircraft industry were white, as were 84 percent in the electrical industry, 68 percent in the mechanical and 66 percent in the motor industries, he said.

"Industry itself should be the last to point a finger at Government on this question of the shortage of skills," he said.

Mr Mupfema said the so-called semi-skilled constituted 25 percent of the labour force. Ten percent of these could be re-orientated as skilled.

"If this were done it would represent a sudden increase of skilled manpower in industry, from the present 9 034 to about 22 000. The means for this up-grading will be the new National Vocational Training Development Centre."

## ENVIRONMENT MINISTER REPORTS TO PARLIAMENT ON PROGRESS

Oslo ARBEIDERBLADET in Norwegian 10 Jun 81 p 7

[Article by Ni's Ottar Ask: "Milestone for Environmental Protection"]

[Text] "There is reason to assert that we are at a milestone in the work to protect the Norwegian environment. A solid platform of environmental protection is being established on which further efforts can be based," said Environment Minister Rolf Hansen when the Storting yesterday dealt with the report on protection of the Norwegian environment. The basis for the minister's assertion was the broad political support the ministry received for its plan for environmental policy.

In its report the ministry presents proposals which among other things delineate the overall perspective for the environmental protection policy. Special stress is placed on widening understanding of what environmental protection involves. Further, that protection of the environment must be a joint responsibility of the whole society.

The Environment Minister asserted that the ministry in all essentials had gained support for its plan, and that environmental protection ought to be given higher priority in the political decision-making process and in all social activity. In its report the environmental protection committee pointed out that in view of the great challenges faced by environmental protection today, extensive research is needed. Rolf Hansen said that the ministry has asked the Norwegian Natural Sciences Research Council to assist in preparing a plan for environmental protection research. "We have the framework of a plan," said the Minister, "and the ministry will present proposals for the future organization of research and planning work."

Hansen went on to point out that the goals of environmental protection set by the report would require strengthening the environmental protection administration. In his opinion, it was widely agreed that this must initially take place at the county level.

The minister gave the information that the new environmental protection agencies in county administrations responsible for environmental protection will function as of September, 1982. According to the minister, this would also provide better opportunities for taking care of and administering the steadily increasing number of protected areas.

Hansen stated further that an overall plan for remaining hydroelectric power projects will, before 1983/84, be arranged in a series of projects for later concession



possibilities, with priority assigned to watercourses with the lowest development costs and with the least effect upon other user interests being dealt with before more costly and controversial watercourses. The plan will also provide a basis for taking a position on which watercourses should be reserved for other purposes. However, on the basis of the energy report it will be necessary to deal with some hydroelectric power projects now being considered for concessions before the overall plan is completed.

"With an overall plan, however, we hope in dealing with watercourse matters to get away from what some described as a "bit-by-bit policy." The overall plan is aimed at creating a basis for a total evaluation of our waterways, so that those least worthy of protection will be developed first," said the Environment Minister."

11,256

CSO: 5000/2134

## PARLIAMENT PASSES NEW LAW TO PROTECT WILDLIFE, LIMIT HUNTING

Stockholm NORDISK KONTAKT in Norwegian 9 Jun 81 p 645-646

[Text] Norway will get a new wildlife law as of 1 April 1982. That law will replace the old hunting law. The main emphasis is put on protection in the new law.

When the Lower House passed the new bill (on 11 May), there was a lively debate. It was evident that many of the delegates were speaking with understanding and deep commitment. Some of them rose to great heights and spoke lyrically of the pleasure of going for a stroll through the woods with a shotgun in the crook of one's arm. On the other hand, other speakers recommended a camera instead of a firearm. One was also reminded of old hunting debates in Parliament in which those elected by popular vote were confronted with a choice between producing sheep or bears!

"The irrational hatred of predators" was another twist in the relationship between two-legged and four-legged creatures, while one of the speakers struck a blow for using the designation "fellow-creatures" for animals. Rolf Fjeldvaer (A) [Labor Party] expressed himself more temperately when he described the horned animals' adaptability in the following terms: "These animals are not great theoreticians, but they are practitioners of God's mercy."

## Matters of Ownership

Matters of ownership occupied a central position in the debate. "It is a question concerned with the economic problems of the individual," said SP [Central Party] spokesman Ragnar Udjus. He said that there was great uneasiness throughout the countryside concerning the bill, which, among other things, gives permission to require property owners to sell hunting licenses for small game.

A number of speakers from the Center Party, the Conservative Party and the Christian People's Party opposed the bill and wanted to limit its application to cases where sheer mismanagement [of game control] exists. Oddrun Pettersen, the chairman of the Municipal and Environmental Protection Committee objected to that proposal, saying that nobody owns the wild animals. "An opportunity must be provided for more people to take part in the exploitation of this resource," he said.

Minister of Environmental Affairs Rolf Hansen reminded his hearers that a necessary condition for selling hunting licenses in such a way is that it be biologically justifiable and that an amicable settlement has been sought in vain.

In addition, the cabinet minister stated that it is a big job for his department to choose the types of animals to which hunting seasons will be assigned. He also emphasized the fact that the idea of protection behind the whole draft of a new wildlife law is in conformity with a worldwide strategy for the protection of nature in which Norway has concurred.

A central element of that strategy is an arrangement empowering the central authorities to be able to adjust hunting seasons, the types of animals which can be hunted, game quotas, etc., in accordance with existing conditions.

#### Predators

Among other things, permission to provide protection against wolverines, bears and other predators which threaten domestic animals was touched upon by Hans Torgersen (Christian People's Party), who attached importance to keeping the number of predators under reasonable control.

After the committee had made a small alteration in the text of the bill, the cabinet minister interpreted the bill as follows where that point was concerned: "It will be permissible to kill a wolverine, for example, in a specific situation where it is probable that an immediate attack is imminent."

One of the more unusual points on which there was disagreement was the question as to whether, as a matter of principle, lambs, mice and rats should be protected. Regardless of how the voting came out, Kjell Magne Færevik (Labor Party) thought that hunting mice continued to be permissible. Torstein Tynning (Conservative Party) thought that would reduce respect for the law, but otherwise he agreed with Færevik that nobody wanted to meddle with the text of the laws. Petter Thomassen (Conservative Party) said, "There are limits to how long one can underestimate people's intelligence."

Stein Ormhoi (Socialist Party of the Left) wanted to put an end to a system by which people are rewarded for taking the lives of animals. Hans E. Strand (Conservative Party) was against the proposal in the draft law on limiting licensing to quickly and unbureaucratically putting bounties on wild animals--or compensation for killing animals, as it is now to be known.

#### Cats

Cats as predators were not a subject of debate. They eliminated that part of the bill effectually in negotiations that took place some months ago, when the committee was inundated with thousands of communications on behalf of cats. Reactions even came from a foreign embassy. Fear for the safety of the embassy's cats was expressed if those pets could be tracked down unmercifully when they went out on a little hunting excursion in the neighborhood. Now the cat paragraph has been removed.

**END OF**

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